

REMARKS

Due to the numerous grammatical and idiomatic errors contained in the abstract and specification, Applicants are enclosing herewith a substitute abstract and specification, including "clean" and "marked-up" copies. The undersigned hereby certifies, to the best of his knowledge and belief, that the enclosed substitute abstract and specification contain no new matter.

Also enclosed herewith for the Examiner's approval are substitute drawing sheets for Figures 3 and 6 in which the legend "Prior Art" has been added thereto. Acceptance of these replacement drawings is respectfully solicited.

The objection to Claim 2 has been overcome through the cancellation thereof. Claim 3 has been amended to respond to the Examiner's objection. Claim 4 has been amended to respond to the Examiner's rejection under 35 USC 112, second paragraph. Claim 6 has been canceled. It is respectfully submitted that the currently presented claims clearly are cured of all formal defects.

Claims 1, 2 and 5 have been rejected under 35 USC 102(b) as being anticipated by Ebe et al. Claims 1 and 2 have been rejected under 35 USC 102(b) as being clearly anticipated by Mikata. Claims 1-6 have been rejected under 35 USC 103(a) as being unpatentable over Doi in view of Ebe et al. Claims 1-4 and 6 have been rejected under 35 USC 103(a) as being unpatentable over Doi in view of Mikata. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

The presently claimed invention is directed to a method of forming a chemical vapor deposition film on a substrate which comprises the steps of providing a chemical vapor deposition apparatus comprising a belljar process chamber, an electromagnetic coil for generating a helicon wave in the process chamber provided around an upper portion thereof, nozzles for supplying a plasma gas provided underneath the

Amendments to the Drawings

Attached are replacement drawing sheets for amended Figures 3 and 6.

electromagnetic coil and around an upper portion of the process chamber, nozzles for supplying a process gas provided equidistantly around the circumference of the process chamber underneath the nozzles for supplying a plasma gas, heating means for heating the substrate, a pressure control gate valve for controlling the pressure in the process chamber, a turbomolecular pump for reducing the pressure in the process chamber and a gate valve for opening the process chamber and allowing handling of the substrate. Chemical vapor deposition of the film on the substrate is conducted in the process chamber under conditions wherein introduction of the process gas into the process chamber and evacuation of the process chamber does not occur simultaneously.

In other embodiments of the present invention, either introduction of a process gas in a process chamber or oxidizing or nitrifying a film formed on the substrate and evacuation of the process chamber does not occur simultaneously. It is respectfully submitted that the presently claimed invention is patentably distinguishable over the prior art cited by the Examiner.

The Ebe et al reference discloses a method and apparatus for conducting chemical vapor deposition for compound semiconductor films in which the chemical vapor deposition reactor chamber has a piston which can change the volume of the chamber to control the pressure of the source gases therein. This reference does not disclose an electromagnetic coil for generating a helicon wave in a belljar process chamber, nozzles for supplying a plasma gas provided underneath the electromagnetic coil and around an upper portion of the process chamber, nozzles for supplying a process gas provided equidistantly around the circumference of the process chamber underneath the nozzles for supplying a plasma gas and the conducting of the chemical vapor deposition of the film on a substrate under the conditions required by the currently presented claims. As such, it is respectfully

submitted that the currently presented claims are clearly patentably distinguishable thereover.

The Mikata reference discloses a method for manufacturing a semiconductor device in a chemical vapor deposition chamber in which a chemical vapor deposition thin film is provided on a substrate by decomposing only the gas for film formation existing in the remaining region without supplying an addition gas from the outside of the remaining region to the remaining region. Like the previously discussed reference, Mikata does not disclose a chemical vapor deposition apparatus having the claimed configuration or the process steps required by the present claims. As such, it is respectfully submitted that the presently claimed invention clearly is patentably distinguishable thereover.

The Doi reference discloses a plasma treating apparatus and plasma treating method in which a plasma is generated in a dielectric container and the surface of a substrate is treated with the plasma and the apparatus includes a hot air heating system for heating the dielectric container by blowing hot air to a central location on the outside surface of the dielectric container to prevent the deposition of a thin film thereon. Although the Doi reference does disclose plasma nitriding or oxidizing treatment through the use of a helicon wave plasma reactor, this reference does not disclose a reactor having the specific configuration required by the present claims or suggest the currently claimed process steps. As such, it is respectfully submitted that this reference, in combination with either of the previously discussed references, does not even present a showing of prima facie obviousness with respect to the presently claimed invention.

Reconsideration of the present application and the passing of it to issue is respectfully solicited.

Respectfully submitted,


Terryence F. Chapman

TFC/smd

FLYNN, THIEL, BOUTELL	Dale H. Thiel	Reg. No. 24 323
& TANIS, P.C.	David G. Boutell	Reg. No. 25 072
2026 Rambling Road	Ronald J. Tanis	Reg. No. 22 724
Kalamazoo, MI 49008-1631	Terryence F. Chapman	Reg. No. 32 549
Phone: (269) 381-1156	Mark L. Maki	Reg. No. 36 589
Fax: (269) 381-5465	Liane L. Churney	Reg. No. 40 694
	Brian R. Tumm	Reg. No. 36 328
	Steven R. Thiel	Reg. No. 53 685
	Donald J. Wallace	Reg. No. 43 977
	Sidney B. Williams, Jr.	Reg. No. 24 949

Encl: Marked-Up Substitute Specification
Clean Substitute Specification
Replacement Abstract
Replacement Drawing Sheets for Figs. 3 and 6
Postal Card

136.05/04